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ABSTRACT

This book of posttests is designed to accompany the Engine Tune-Up Service Student Guide for Unit 2, Charging System, available separately as CE 031 208. Focus of the posttest is on the testing of the charging system. One multiple choice posttest is provided, that covers the three performance objectives contained in the unit. (No answer key is provided.) (YLB)

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ENGINE TUNE-UP SERVICE

Unit 2: Charging System

Posttests

Automotive Mechanics Curriculum

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POSTTEST
UNIT 2

Directions: Read the first question carefully. After selecting your answer, record the answer on your answer sheet in the space provided.

Next, turn to the question listed in parentheses at the end of your answer. For example, if your choice says, "go to #14," you would answer question 14 next.

Each time you answer a question, be sure to write down on your answer sheet BOTH the question number and your answer. Continue working through the test until you reach the end.

You will be jumping from question to question, and will not have to answer more than 20 questions in all.

DO NOT MARK ON THIS TEST.

1. **Situation:** You work as a mechanic for Ralph s Garage. A customer has come in complaining that her battery has needed charging several times recently. Her car, a 1972 Plymouth, is parked out in front.

   What is the first thing you should do?

   a. Show the customer your new batteries (go to #27)
   b. Visually inspect the battery and engine compartment (go to #12)
   c. Make a charging system output test (go to #5)
   d. Make a battery capacity test (go to #22)
   e. Make a voltage regulator output test (go to #19)
   f. Replace the alternator (go to #7)
   g. Replace the voltage regulator (go to #9)
   h. Make a charging system circuit resistance test (go to #41)

2. The proper method for removing an alternator pulley is to:

   a. Knock it out with a hammer and drift (go to #31)
   b. Hook up a gear puller and remove the pulley (go to #31)
   c. Remove the set screw or nut, then remove the pulley (go to #31)
   d. Turn the shaft with an allen wrench and push the pulley off (go to #31)

3. The voltage regulator output test shows low output. You should:

   a. Replace the voltage regulator (go to #32)
   b. Replace the alternator (go to #7)
   c. Perform a charging system output test (go to #4)
   d. Make an alternator output test (go to #10)

4. The charging system output test shows an output of 20 amps. Manufacturer's specifications call for 32 amps. What should you do?

   a. Replace the alternator (go to #7)
   b. Make an alternator output test (go to #10)
   c. Make a regulator circuit resistance test (go to #18)
   d. Replace the voltage regulator (go to #9)
   e. Perform a ground circuit resistance test (go to #8)
   f. Check the alternator belt for proper tension (go to #6)

5. When making a charging systems output test, the voltage from the alternator should never exceed:

   a. 12 volts (go to #28)
   b. 14 volts (go to #28)
   c. 16 volts (go to #23)
   d. 18 volts (go to #6)

6. Which of the following conditions could NOT have caused the symptoms described in question #1?

   a. Worn alternator brushes (go to #42)
   b. Loose or corroded connections in the charging circuit (go to #42)
   c. Excessive alternator output (go to #42)
   d. Defective battery (go to #42)
   e. Excessive voltage regulator circuit resistance (go to #42)

7. The first step in replacing an alternator is to:
   a. Disconnect the battery ground cable clamp (go to #2)
   b. Loosen the alternator mounting bolt (go to #2)
   c. Loosen the alternator adjusting bolt (go to #2)
   d. Disconnect the voltage regulator wires (go to #2)

8. Results from the ground circuit resistance test and the voltage regulator ground circuit test are within specifications. What should you do now?
   a. Make a battery drain test (go to #13)
   b. Replace the alternator (go to #7)
   c. Replace the voltage regulator (go to #32)
   d. Make a visual inspection of the engine compartment (go to #6)

9. After replacing the voltage regulator, you should:
   a. Make a charging system output test (go to #42)
   b. Call the customer and tell her that the car is ready (go to #42)
   c. Perform a battery drain test (go to #6)
   d. Perform an alternator output test (go to #42)

10. The alternator is putting out 34 amps at 1200 RPM. Manufacturer's specifications call for 32 amps. You should:
   a. Replace the alternator (go to #6)
   b. Replace the voltage regulator (go to #32)
   c. Make a regulator circuit resistance test (go to #36)

11. Belt tension is within specifications. You should now:
   a. Perform an alternator output test (go to #16)
   b. Perform a voltage regulator output test (go to #26)
   c. Make a charging circuit resistance test (go to #6)
   d. Replace the alternator (go to #7)
   e. Replace the voltage regulator (go to #32)

12. The battery case, clamps, and posts are clean; the clamps are tight; and the cables look good. What should you do?
   a. Continue your visual check of the engine compartment (go to #30)
   b. Make a battery capacity test (go to #22)
   c. Make a charging system output test (go to #23)
   d. Replace the alternator (go to #7)
   e. Replace the voltage regulator (go to #9)
   f. Replace the battery (go to #25)

13. When making a battery drain test, your voltmeter shows no reading. This means that:
   a. The alternator is not working and should be replaced (go to #7)
   b. No drain exists in system. The charging system output should be checked (go to #6)
   c. The battery needs replacement (go to #6)

14. When making a charging systems output test, the voltage from the alternator should never exceed:

a. 6 volts (go to #4)
b. 12 volts (go to #4)
c. 14 volts (go to #4)
d. 16 volts (go to #4)

15. The customer is back again the next day, claiming that the new battery in her car is too low to start the car. After listening to her complaints about "idiot mechanics," you should:

a. Call your battery supplier—too many defective batteries are showing up (go to #6)
b. Replace the battery with another new one (go to #6)
c. Replace the alternator (go to #7)
d. Make a charging system output check (go to #23)
e. Visually inspect the engine compartment (go to #40)

16. The alternator output test shows 34 amps being put out at 1200 RPM. Manufacturer's specifications are 32 amps. You should:

a. Inspect all wiring in the charging circuit (go to #6)
b. Replace the alternator (go to #7)
c. Replace the voltage regulator (go to #32)
d. Check the alternator belt (go to #6)

17. The belt has been replaced and adjusted properly. Next, you should:

a. Tell the customer her car is ready (go to #42)
b. Make a battery capacity test (go to #6)
c. Make a battery drain test (go to #13)
d. Make a charging system output test (go to #14)

18. Results of the charging system circuit resistance test are within manufacturer's specifications. You should:

a. Replace the alternator (go to #7)
b. Replace the regulator (go to #32)
c. Make a voltage regulator ground circuit resistance test (go to #36)
d. Perform a charging circuit insulated resistance test (go to #29)
e. Tell the customer her car is ready (go to #42)

19. Voltage regulator test results are 2 volts below manufacturer's specifications. You should:

a. Replace the alternator (go to #6)
b. Replace the voltage regulator (go to #9)
c. Check the charging circuit wiring (go to #41)
d. Check the charging system output (go to #5)

20. After charging the battery, you should:

a. Make a charging system output test (go to #5)
b. Replace the voltage regulator (go to #9)
c. Replace the alternator (go to #7)
d. Tell the customer her car is ready (go to #42)

21. The charging system output test shows 5 amps being put out. While making the test, you notice a loud squeal coming from the engine compartment. The most likely cause of this noise is:

a. The alternator (go to #7)
b. The alternator belt (go to #24)
c. The voltage regulator (go to #32)
d. The charging circuit wiring (go to #6)

22. The battery capacity test shows that the battery is low, but otherwise okay. What should you do next?

a. Charge the battery (go to #20)
b. Make a charging system output test (go to #5)
c. Replace the alternator (go to #7)
d. Replace the voltage regulator (go to #9)

23. The charging system output test shows 6 amps being put out. While making the test, you notice a loud squeal coming from the engine compartment. The most likely cause of this noise is:

a. The alternator (go to #7)
b. The alternator belt (go to #17)
c. The regulator (go to #9)
d. The charging circuit wiring (go to #6)

24. After checking the belt tension and adjusting it to specifications, you should:

a. Perform a charging system output test (go to #14)
b. Check the alternator output (go to #10)
c. Check the charging system circuit resistance (go to #18)
d. Tell the customer that her car is ready (go to #42)

25. The customer is back the next day. Her newly replaced battery is too low to start the car. You should:

a. Visually inspect the engine compartment (go to #30)
b. Make a charging system output check (go to #23)
c. Replace the battery—it must be defective (go to #15)
d. Replace the alternator (go to #7)

26. The voltage regulator output test shows low output. You should:

a. Replace the voltage regulator (go to #32)
b. Replace the alternator (go to #7)
c. Check the battery capacity (go to #6)
d. Perform the alternator output test (go to #16)

27. The customer selects a battery and you install it. Next, you should:

a. Check the charging system output (go to #23)
b. Call the customer and tell her that the car is ready (go to #25)
c. Visually inspect the rest of the engine compartment (go to #30)
d. Make a battery drain test (go to #13)

28. You can locate directions on the proper hookup and use of the starting/charging systems tester in the:

a. Alternator manufacturer's repair manual (go to #23)
b. Technical service manual (go to #23)
c. Vehicle manufacturer's shop manual (go to #23)
d. Starting/charging systems tester instruction manual (go to #23)

29. Results of the charging circuit insulated resistance test are within specifications. What should you do next?

a. Replace the voltage regulator (go to #32)
b. Replace the alternator (go to #7)
c. Make a ground circuit resistance test (go to #8)
d. Check the alternator belt tension (go to #11)

30. The wiring in the charging system looks good and the connections are tight. However, the alternator belt is loose and looks worn. You should:

a. Replace the alternator belt (go to #39)
b. Replace the battery (go to #15)
c. Replace the alternator (go to #6)
d. Tighten the belt to specifications (go to #24)

31. After replacing the alternator with a new or rebuilt unit, you should:

a. Check the alternator belt tension (go to #6)
b. Perform a charging system output test (go to #6)
c. Perform a charging circuit resistance test (go to #6)

32. After replacing the voltage regulator, you should:

a. Make a charging systems output check (go to #42)
b. Call the customer and tell her that the car is ready (go to #42)
c. Replace the alternator (go to #42)
d. Perform an insulated circuit resistance test (go to #42)

33. After installing a new alternator belt, you should:

a. Check the alternator output (go to #35)
b. Check the charging system output (go to #21)
c. Check the charging circuit resistance (go to #18)
d. Check and adjust the tension of the belt (go to #17)

34. Results of the voltage regulator ground circuit resistance test are within specifications. You should now:

a. Replace the voltage regulator (go to #9)
b. Make a voltage regulator output test (go to #26)
c. Check the battery capacity (go to #6)
d. Tell the customer her car is ready (go to #42)

35. While revving the engine, you hear a loud squeal. The alternator output test show 12 amps being put out. You should:

a. Replace the alternator (go to #2)
b. Make a charging system circuit resistance test (go to #6)
c. Check the alternator belt (go to #17)
d. Make a ground circuit resistance test (go to #6)

36. Results of the voltage regulator ground circuit resistance test are within specifications. You should now:

a. Replace the voltage regulator (go to #32)
b. Make an alternator output test (go to #6)
c. Make a charging circuit insulated resistance test (go to #29)
d. Make a voltage regulator test (go to #11)

37. Results of the charging system circuit resistance test are within specifications. You should:

a. Replace the alternator (go to #7)
b. Replace the voltage regulator (go to #9)
c. Make a voltage regulator ground circuit resistance test (go to #34)
d. Tell the customer her car is ready (go to #42)

38. The charging system output test results show 12 amps being produced, and you notice a squeal when the engine is revved. What should you do next?

a. Replace the alternator (go to #7)
b. Make an alternator output test (go to #35)
c. Check the alternator belt (go to #17)
d. Check the charging circuit wiring (go to #37)

39. The belt tension given in a technical service manual is 70 lbs.—used, 120 lbs.—new. You should:

a. Tighten the new belt to 70 lbs. (go to #33)
b. Tighten the new belt to 120 lbs. (go to #17)
c. Tighten the new belt to 150 lbs. (go to #17)
d. Torque the alternator mounting bolt to 120 ft.-lbs. (go to #18)

40. All wiring in the charging circuit looks good and connections are tight. However, the alternator belt is loose and looks worn. What should you do?

a. Replace the belt (go to #39)
b. Replace the alternator (go to #6)
c. Replace the voltage regulator (go to #6)
d. Tighten the belt to specifications (go to #24)

41. Results of the charging system circuit resistance test are within manufacturer's specifications. You should:

a. Replace the alternator (go to #7)
b. Replace the voltage regulator (go to #32)
c. Show the customer your new batteries (go to #27)
d. Check the battery capacity (go to #22)
e. Check the charging circuit insulated resistance (go to #36)
f. Make a charging system output test (go to #5)
g. Visually inspect the battery (go to #12)

42. STOP. You have completed this activity. Give this test and your answer sheet to your instructor.

Notes